

What is claimed is:

1. A heat spreader module, comprising:

a base;

5 a heat spreader member joined on said base; and

an insulating substrate arranged on said heat spreader member,

wherein said base includes a copper alloy which is heat treated at a temperature between 600° and 900° C for 10 minutes to have a proof stress of not less than 45 MPa and a coefficient of thermal conductivity of not less than 270 W/mK.

2. The heat spreader module according to claim 1, wherein said copper alloy of said base is any one of:

(a) a copper alloy comprising 0.1 to 1.5 mass % Cr and the balance being Cu;

(b) a copper alloy comprising 0.1 to 0.5 mass % Zr and the balance being Cu;

20 (c) a copper alloy comprising 0.05 to 0.3 mass % Zr, 0.3 to 1.2 mass % Cr, and the balance being Cu;

(d) a copper alloy comprising 0.01 to 1.5 mass % Ag and the balance being Cu;

25 (e) a copper alloy comprising 1.4 to 3.0 mass % Fe, 0.05 to 0.2 mass % Zn, 0.01 to 0.1 mass % P, and the balance being Cu; and

(f) alumina-dispersed copper.

3. The heat spreader module according to claim 1, wherein said heat spreader member comprises a composite material including carbon and one of copper and a copper alloy.

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4. The heat spreader module according to claim 3, wherein said composite material comprises a C base material impregnated with copper or a copper alloy.

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5. The heat spreader module according to claim 1, wherein said heat spreader member comprises a composite material including SiC and one of copper and a copper alloy.

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6. The heat spreader module according to claim 5, wherein said composite material comprises an SiC base material impregnated with copper or a copper alloy.

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7. The heat spreader module according to claim 1, wherein said insulating substrate includes one of AlN and  $\text{Si}_3\text{N}_4$ .

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8. The heat spreader module according to claim 1, wherein said base, said heat spreader member, and said insulating substrate are joined with a hard solder material having a melting point of not less than 600° C.

9. The heat spreader module according to claim 1,

wherein said base has a thickness of not less than 0.5 mm,  
and said thickness is not more than 40% of an entire  
thickness of said heat spreader module.

5           10. The heat spreader module according to claim 1,  
wherein an IC chip is arranged on said insulating substrate  
with an electrode interposed between said IC chip and said  
insulating substrate.

10           11. The heat spreader module according to claim 1,  
wherein a heat-releasing member is joined under said heat  
spreader member.